Objective and subjective assessment of chronic disease management in General Practice. To determine the standard of care provided in the management of asthma, gout and hypothyroidism by means of a medical audit.

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Abstract

Asthma, gout and hypothyroidism are common chronic medical disorders encountered in general practice. Optimal disease management according to standard guidelines are fundamental to disease control. This study aimed to objectively and subjectively assess the quality of care provided in a private general practice to patients with asthma, gout and hypothyroidism by means of a practice audit and questionnaire based survey. These tools proved to be an effective measure for the quality of care provided and identified areas needing improvement. Patient's understanding of the disease process plays an important role in both patient satisfaction ratings and success of disease control. The medical audit identified and highlighted specific areas of care that can be improved. Evidence from the practice audit showed that control for asthma based on the PEFR readings, gout based on the serum uric acid reading and hypothyroidism based on a blood TSH reading, was found at 56.7%, 43.3%, and 66.7 % respectively. In addition acute attacks of asthma and gout occurred in 22.7% and 32.8% respectively. This does not represent good control. Definition of disease control for each condition is placed in the text. The survey revealed overall patient understanding for the disease processes of asthma, gout and hypothyroidism to be 69.6%, 73.3% and 66.8% respectively. The patient survey satisfaction rating for asthma, gout and hypothyroidism was 93.1%, 93.9% and 89.2% respectively. Patient suggestions for improvement included three dominant themes: better assessment of disease control, education about their chronic disease and implementation of a clearer referral process. The study concludes that disease control can be achieved if patients are educated about their chronic disease and regularly followed up to assess disease control based on standard management guidelines. Patients' disease education was a major contributing factor for satisfaction

rating bias. The study confirms that in spite of high satisfaction ratings, patients are not optimally managed with substandard disease control. It would be expected that as disease education improves, the quality of care will improve, but satisfaction ratings will decrease.

Introduction

Background

Chronic disease management is part of any general practice. The quality of care provided in managing chronic diseases needs to be assessed; it cannot be assumed to be of an optimal standard. Patients and professionals have different opinions on what good quality of care is [1,2]. Patient satisfaction has been directly linked to better adherence to treatment and follow-up [2, 3]. Better adherence to treatment is associated with patients' improved understanding of the disease process. Quality of care is the key to patient satisfaction and disease control [2, 3.] This implies that satisfied patients tend to seek medical advice, adhere to treatment and maintain a continuing relationship with their practitioner [1-6].

The problem of poor chronic disease management

Asthma, gout and hypothyroidism (henceforth also named: the three diseases) are three common chronic diseases in my practice of interest to me. These diseases imply significant morbidity for patients, even though effective maintenance treatments are available. It appears that clinical guidelines directing the treatment of these conditions are not closely adhered to. Optimal disease management according to standard guidelines are key elements to disease control and ultimately patient satisfaction [7-12]. Lack of protocol adherence negatively influences the standard of care provided to patients with these chronic diseases. Regular patient follow up to assess disease control reduces unnecessary symptoms, complications and emergency consultations [7-12]. In order to recognise how to improve the management of these chronic diseases, the quality of care provided to practice patients with a diagnosis of any of these three chronic diseases was assessed. An objective practice audit and subjective survey evaluation of patients' views on quality of care was done to study the quality of care provided to identify areas of care that were of a poor standard and needed improvement [1-6]. In order to improve the quality of care there is a need to measure and implement quality assurance. Patient views are defined as "an individual and personal perception, judgement, or interpretation, an opinion" [1-6, 13]. Quality assurance is defined as "the assessment of the quality of medical care, the efforts to improve the provision of that care, and the procedure to ensure that good quality of care is maintained" [14].

Aim

To assess the quality of care provided to patients with the three diseases in a private general practice.

Methods

Quality of care was measured by means of a routine practice medical audit. This involved: One, an objective assessment of care provided based on standard criteria in the framework of a practice audit and, Two, the subjective evaluation of patients' views on care received by means of a questionnaire survey.

Objective assessment: The practice audit comprised a physical practice audit against target criteria based on specific guidelines and protocols for each disease. This was done using a retrospective review of 30 permanent patient clinical records for each chronic disease from consultations performed over the period 2009 – 2010. Based on statistical criteria for the calculation of standard deviation, a sample of 30 is deemed to be adequate to avoid sampling error.

Subjective assessment: In 2011 a patient postal survey involved assessment of patients' views on the standard of care provided in 2010 on the chronic diseases listed by means of a disease specific questionnaire that the participant completed at home.

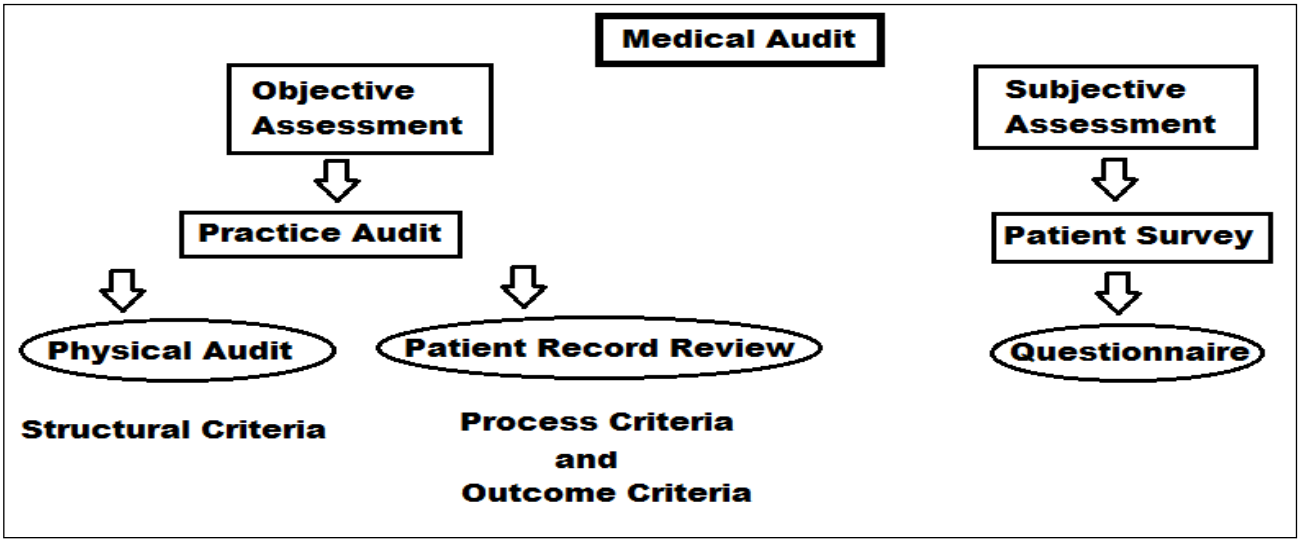

Figure 1: Components of the medical audit

The information obtained from the medical audit and survey was used to establish whether the practice was providing optimal care based on published guidelines. Patients can be definers of good quality of care, evaluators of health care delivery and reporters of their experiences in the consultation. Therefore, assessing patients' views by means of a survey offers valuable contributions to the improvement of health care [1-6].

This study will complete a single audit cycle and plan change without implementing or measuring

this change. The results of this assessment will form the baseline for future audits. The medical audit tools and results can be adjusted and applied to any chronic disease in general practice or clinic to assess quality of care provided.

Setting and participants

Subjects for this study were patients over 21 years of age from a specific private practice with diagnosed asthma, gout and hypothyroidism who attended the practice for any consultation during 2009 to 2010. Patients were identified from the chronic disease register by means of an allocated file number at initial registration.

Thirty files for review were selected in alphabetical order from the compiled disease specific registers of patients who attended the practice from January 01, 2009 to December 31, 2010 with the diagnoses of asthma, gout and hypothyroidism.

A disease specific questionnaire was posted with an information letter to all patients with asthma, gout and hypothyroidism identified from the disease register. Patients completed the questionnaire at home and sent it back to the practice in a stamped addressed return envelope. A patient might have received more than one letter depending on their disease profile.

Measures

a. Objective audit by means of assessing standard criteria

Each chronic disease was assessed individually. Structural criteria, process criteria and outcome criteria were used to audit the practice. Structural criteria were assessed by physically ascertaining the availability of equipment, drugs and management guidelines and protocols. Process and outcome criteria were assessed by means of review of clinical records. The set target standard of care was determined by literature review for each criteria assessed from the clinical records.

Appendix 1, 3, 5

b. Subjective evaluation by means of a Questionnaire survey

Understanding patients' views on the quality of care is crucial for the effective evaluation of services provided in a practice [1-6]. The quality of care received and provided in general practice was subjectively assessed by means of a disease specific questionnaire survey. Patients' views were assessed on care provided related to the three diseases. There is no single questionnaire which can satisfy requirements to elicit patients' views on chronic disease management, therefore the research questionnaires were compiled from tested questionnaires retrieved from the literature review.

Appendix 2, 4, 6

Chronic diseases assessed

a. Asthma

Asthma is a chronic inflammatory condition of the airways. Periodic assessment of asthma control with treatment review of all patients with confirmed asthma is fundamental to symptom control. Patients must be assessed using the Asthma Control Test (ACT) questionnaire and clinically at every routine visit [7]. Optimal treatment of asthma includes symptom control and continuous patient education. Improving control depends on recognition by both the patient and the physician as to what constitutes good asthma control [8, 9]. Active participation of patients in the management of their asthma ensures control [8, 9]. Worldwide surveys showed that the majority of patients with asthma are symptomatically not well controlled [7, 10]. Patients with asthma should be educated not to accept a certain level of symptoms or activity limitations as an inevitable consequence of asthma. Physicians should be aware of the new medication recommendations included in the latest guidelines. The guidelines emphasize the importance of assessing, achieving, and continually monitoring asthma control [9]. Asthma is controlled when the goals of asthma management are achieved and maintained (Table 1), resulting in reduced morbidity and mortality [7].

Table 1: The Global Initiative for Asthma (GINA) goals for asthma treatment [7].

Achieve and maintain symptom control (ACT questionnaire >19)
Maintain normal activity levels (including exercise)
Maintain pulmonary function/PEFR (as close to normal as possible >80%)
Prevent exacerbations
Avoid medication related adverse effects
Prevent asthma mortality

The audit tool developed by the Asthma Guidelines Implementation Project (AGIP) was used for the purpose of the practice audit [8]. The audit criteria are based on the 2007 South African Thoracic Society (SATS) Guidelines for the Management of Chronic Asthma in Adolescents and Adults and the National Asthma Education and Prevention Program (NAEPP) guidelines [7, 8, 9].

Appendix 1 [7-9]

The survey questionnaire is based on the Asthma Control Test (ACT) questionnaire. This is an

internationally validated means to assess asthma control [7-9]. **Appendix 2** [7-9].

The use of guideline based treatment strategies has been shown to favourably affect asthma outcomes, but it is recognised that previous guidelines were not adequately followed, leading to poor control [9]. Following the new Asthma Guidelines, one can expect to achieve a reasonable level of asthma control [9]. For this study, the expectation was that the standard of care is good. The standard of asthma control was set at 80%. This also accords with the target set by AGIP, Asthma Audit Tool for Primary Care 2007 [7-9].

b. Gout

Gout is a well described disease where treatment is almost 'curative'. Gout is a common cause of acute mono-arthritis arising from deposits of urate crystals. The aim of therapy is to relieve symptoms and to lower the serum urate concentration below 0.36mmol/l. Gout is metabolically closely linked to hypertension, obesity, hyperinsulinaemia, the metabolic syndrome (insulin resistance) and coronary artery disease, rendering it very important to general public health [10, 11, 15, 16].

Table 2: Metabolic Syndrome Diagnostic Criteria [16].

Central Obesity	Waist Circumference: Male: ≥ 94 cm Female: ≥ 80 cm
Dyslipidemia	Triglycerides ≥ 1.70 mmol/L (150mg/dl) HDL-C < 1.03 mmol/l (40 mg/dl) in males < 1.29 mmol/l (50 mg/dl) in females or on specific treatment for dyslipidemia
Hypertension	BP ≥ 130/85 mmHg or on antihypertensive medication
Fasting Plasma Glucose	≥ 5.6 mmol/l (100 mg/dl) or previously diagnosed Type 2 diabetes

The British Society for Rheumatology and British Health Professionals in Rheumatology 2007 Guidelines for the Management of Gout was used to create an audit tool and questionnaire. The 2007 Guidelines emphasize that prevention of attacks are the mainstay of treatment and lifestyle modification is the cornerstone of prevention [10, 11]. **Appendix 3, 4** [10, 11, 15]

c. Hypothyroidism

Hypothyroidism is a disorder of the thyroid gland failing to secrete an adequate amount of Thyroxine (T_4). Hypothyroidism is a common disease in Western populations, increasing with age [12].

The management of hypothyroidism is generally considered to be straight forward and should be done at primary care level. Surveys show that 40-48% of patients on treatment are not well controlled [12]. Measuring TSH is the cornerstone of monitoring replacement therapy. Evidence shows that despite incorrect TSH levels and clinical presentation, treatment is not adjusted. Reasons for this are lack of availability of treatment guidelines and protocols for drug monitoring in general practice [12, 17-19].

The Research Unit of the Royal College of Physicians of London, the Endocrinology and Diabetes Committee of the College, and the Society for Endocrinology produced audit measures to ensure a good standard of care for patients with thyroid disease [19]. These guidelines were used to develop the practice audit tool and questionnaire. **Appendix 5, 6** [12, 17-19]

Results

a. Practice audit results

The physical practice audit assessed the structural criteria performance. Thirty files drawn from each chronic disease register was assessed to determine the process and outcome criteria performance.

Table 3: Asthma Practice Audit Performance

Structural Criteria	Target %	Actual %
% rooms with a Functional PEF meter	100	100
% Rooms with a PEF reference card	100	100
Spirometric lung function equipment on premises	Yes	Yes
% rooms with height measure	100	100
Availability of a Printed published adult Asthma management guideline	Yes	Yes
Availability of Asthma Control Assessment Questionnaire (ACT)	Yes	Yes
A spacer available for demonstration	Yes	Yes
% rooms with a placebo inhaler for demonstration	100	**66.7**
Clear specialist referral protocols	Yes	**No**
Availability of patient education material	Yes	Yes

Emergency room equipment		
Immediately accessible written emergency management protocol	Yes	**No**
Availability of dedicated emergency room	Yes	Yes
Availability of oxygen	Yes	Yes
Availability of a spacer	Yes	Yes
Availability of a nebuliser	Yes	Yes
Availability of a Spacer	Yes	Yes
Availability of a PEF meter	Yes	Yes
Emergency room drugs available		
Salbutamol nebuliser solution 5mg/ml	Yes	Yes
Ipratropium Bromide nebuliser solution 0.25mg/ml	Yes	Yes
Hydrocortizone 100mg IV	Yes	Yes
Process Criteria 2009-2010 (30 Records reviewed)	**%**	**%**
% patients with documentation of any routine asthma related visits	95	86.7
% patients with record of assessment of control (any questionnaire assessment or ACT completed)	80	**16.7**
% of patients with any documentation of PEF rate assessment	80	**23.3**
% patients with documentation of assessment/review of inhaler/spacer technique	95	**0**
% documentation about disease education	80	**0**
% patients with any documentation of smoking status/counselling	95	**20**
% patient with any documentation of assessment on asthma aggravating factors	80	**16.7**
% emergency asthma visit documentation	50 **	**66.7**
% of patients where asthma treatment is documented	100	93.3
Outcome Criteria		
% patients well controlled (based on the last recorded PEFR or Control questionnaire)	80	**56.7** ***
OVERALL PERFORMANCE*	**94.5**	**71.6**

Note: ***** Yes = 100%, No = 0%

** = Target reduced to 50% average with the assumption that not all emergency visits may be recorded, patients might seek emergency consultation elsewhere and disease control is targeted at 80%.

*** = 30% not recorded

Definitions:

Documentation: Documented within the stipulated period, 2009-2010

Any documentation: Documented anywhere on the record, not necessarily within the stipulated period.

PEFR: Peak expiratory flow rate

ACT questionnaire : Asthma control questionnaire

Controlled Asthma: An ACT score of >19.

Control: The degree to which the manifestations of asthma (symptoms, functional impairments, and risks of untoward events) are minimized and the goals of therapy are met.

Goals of therapy: See Table 1

Acute Asthma attack: PEF values of 50–79% predicted or personal best. Symptoms and signs suggestive of a more serious exacerbation are marked breathlessness, inability to speak more than short phrases, use of accessory muscles or drowsiness.

Values below 50% indicate the need for immediate medical care.

Emergency: unscheduled visit for an acute Asthma attack.

Table 4: Gout Practice Audit Performance

Structural Criteria	**Target %**	**Actual %**
% rooms with height measure	100	100
% rooms with weight measure	100	100
Availability of a Printed published Gout management guideline	Yes	**No**
Clear specialist referral protocols	Yes	**No**
Availability of patient education material	Yes	Yes
Emergency/Procedure room equipment		
Sterile equipment for aspiration of effusion	Yes	Yes
Specimen bottles for pathology evaluation	Yes	Yes
Availability of dedicated procedure room	Yes	Yes
Emergency/Procedure room drugs available		
NSAIDS IM/PO	Yes	Yes
Colchicine PO	Yes	No
Cortisone IA/IM/PO	Yes	Yes
Process Criteria (30 Records reviewed 2009-2010)	**%**	**%**
% patients with documentation of any routine gout related visits	100	100
% patients with any documentation of smoking status/counselling	100	**33.3**
% patients with any documentation of alcohol use/counselling	95	**36.7**
% patients with any documentation of exercise status/counselling	95	**43.3**
% patients with any documentation of diet counselling or referred to a dietitian	95	**40**
% documentation about disease education at routine visits	100	**40**
% of patients with documented uric acid levels	100	**56.7**
% patients with documentation of BP recordings at every review visit	100	**90**
% patients with documentation of body weight	100	**33.3**
% patients with a calculated Body Mass Index (BMI)	100	**0**
% patients with documentation that hyperlipidaemia was excluded by means of a Lipogram	100	**86.7**
% patients with documentation that diabetes mellitus has been excluded by means of a random or fasting blood sugar level	100	**83.3**
% patients with documentation of a urine dipstick result	100	**33.3**
% records with documentation of treatment	100	**96.7**
% emergency acute attack visit documentation	50 **	**36.7**
Outcome Criteria		

% patients controlled based on a uric acid level below 0.36mmol/l	80	**43.3** ***
OVERALL PERFORMANCE*	**96.9**	**61.2**

Note: * Yes = 100%, No = 0%

** = Target reduced to 50% average with the assumption that not all emergency visits may be recorded, patients might seek emergency consultation elsewhere and disease control is targeted at 80%.

*** = 40% not recorded

Definitions:

Documentation: Documented within the stipulated period, 2009-2010

Any documentation: Documented anywhere on the record, not necessarily within the stipulated period.

BMI: Body Mass Index (weight divided by length squared)

Acute attack: Rapid onset of an acute mono-arthritis caused by urate crystal deposits in the joint involved. Characteristics are pain, swelling and erythema in the affected joint.

Control: Serum urate level below 0.36 mmol/l or an asymptomatic patient.

Table 5: Hypothyroid Practice Audit Performance

Structural Criteria	**Target %**	**Actual %**
Availability of a Printed published adult Hypothyroid management guideline in the practice	Yes	**No**
Clear specialist referral protocols	Yes	**No**
Availability of patient education materials	Yes	**No**
Emergency/Procedure room equipment		
Availability of ECG monitoring in the event of suspected Hyperthyroidism	Yes	Yes
Process Criteria (30 Records reviewed 2009-2010)	**%**	**%**
% documentation of yearly routine visits for assessment of hypothyroidism control and TSH level monitoring	80	**96.7**
% patients where the hypothesis of the cause has been documented	100	**13.3**
% patients with documentation that diabetes mellitus has been excluded by means of a random or fasting blood sugar level	100	**53.3**
% patients with documentation that hyperlipidaemia has been excluded by means of a fasting Lipogram	100	**70**
% documentation of treatment	100	100
Outcome Criteria		
% patients well controlled based on the last TSH level	80	**66.7** **
OVERALL PERFORMANCE*	**96.0**	**50.0**

Note: * Yes = 100%, No = 0%

** = 20% not recorded

Definitions:

Control: TSH level within normal range on treatment for 1 year and an asymptomatic patient.

b. Patient questionnaire survey response rate

A total of 113, 100 and 154 questionnaires were sent out to all identified asthma, gout and hypothyroid patients respectively. The response rate was 22 (19.5%), 26 (26%) and 38 (24.7%) respectively, which is expected for a postal survey (Figure 2). To address the question whether the responses obtained from this small sample can be considered as representative of the total patient population, the gender and age distribution between the sample and the total population for each chronic disease was compared. The statistics in Table 6 indicate that the sample is an adequate representation of the practice population for each chronic disease.

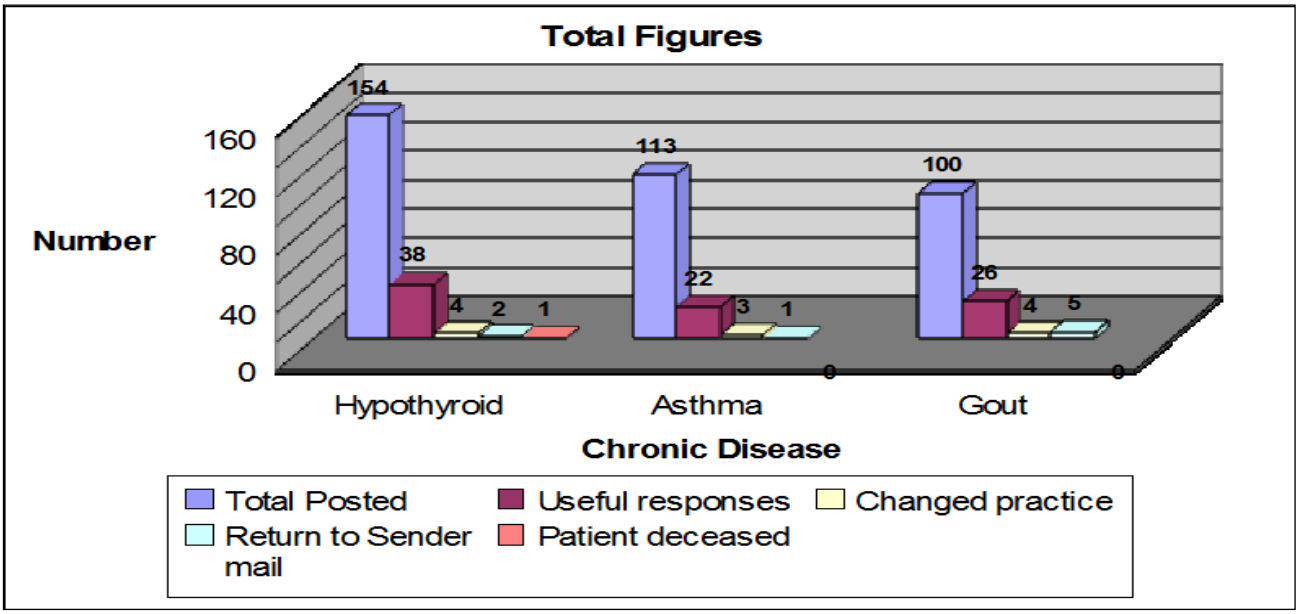

Figure 2: Total questionnaire response for each chronic disease

Table 6: Comparison of sample and population statistics

Chronic disease	Parameter	Sample statistic	Population statistic
Asthma	Male/Female ratio	47.6 : 52.4	37.2 : 62.8
	Age average	51.8	58.3
	Age standard deviation	18.3	17.9
Gout	Male/Female ratio	84.6 : 15.4	79.0 : 21.0
	Age average	69.0	67.5
	Age standard deviation	11.0	13.1
Hypothyroid	Male/Female ratio	10.8 : 89.2	14.3 : 85.7
	Age average	68.3	66.2

	Age standard deviation	13.0	15.6

c. Patient questionnaire results

Table 7: Asthma: Patient understanding of disease process

Question	Yes %	No %
Steroid inhalation assessed in last year	40.9	59.1
Understand difference between control (maintenance) and reliever (emergency) medication	100	0
Knowledge about current medication	100	0
Reason for current medication	100	0
Triggers or allergens aggravation assessment	36.4	63.6
If smoking - Counselling received about stopping	100	0
Control assessed in last year	68.2	31.8
Education received for control self-assessment	63.6	36.4
Educated on adjusting medication based on above self assessment	59.1	40.9
Information leaflet received from GP as part of education	27.3	72.7
Overall performance	**69.6**	**30.4**

Table 8: Gout: Patient understanding of disease process

Question	Yes %	No %	Not answered %
Knowledge about current medication	100	0	
Knowledge about current dosage	100	0	
Understand difference between maintenance and acute attack medication	79.2	20.8	
Knowledge about reason for choice of maintenance drug class	96	4	
Triggers or allergens aggravation assessment	39.1	60.9	
If smoking - Counselling received about stopping	100	0	
If using alcohol - Counselled on consumption	68.4	31.6	
GP checked blood pressure at review	96	4	0
GP checked weight at review	64	20	16
GP checked height at review	48	32	20
GP checked blood sugar level at review	64	24	12

GP checked cholesterol level at review	84	12	4
GP checked uric acid level at review	72	24	4
GP checked urine test at review	56	36	8
Education received for control self-assessment	72.7	27.3	
Education received for control self-assessment	58.3	41.7	
Educated on adjusting medication based on above self assessment	48	52	
Overall performance	**73.3**	**22.9**	**3.8**

Table 9: Hypothyroid: Patient understanding of disease process

Question	**Yes %**	**No %**	**Not answered %**
Knowledge about current medication and dosage	100	0	
GP checked blood pressure at review	91.9	8.1	0
GP checked weight at review	67.6	27	5.4
GP checked height at review	54.1	35.1	10.8
GP checked blood sugar level at review	64.9	27	8.1
GP checked cholesterol level at review	67.6	24.3	8.1
GP checked thyroid function level at review	83.8	13.5	2.7
Education received about chronic disease	54.5	45.5	
Information leaflet received from GP as part of education	17.1	82.9	
Overall performance	**66.8**	**29.3**	**3.9**

Table 10: Patient satisfaction ratings

Chronic disease	**Average**	**Standard deviation**	**Range**
Asthma	93.1	11.7	65 to 100
Gout	93.9	19.2	20 to 100
Hypothyroid	89.2	21.6	0 to 100

Discussion and Data analysis

Problems experienced

a. Sampling bias

Audit

Sample size: 30 patient records for each chronic disease were reviewed. The sample was selected

alphabetically from each disease register. The representative sample was 26.5%, 30% and 19.5% of the total patient practice population with asthma, gout and hypothyroidism respectively. Based on statistical criteria for the calculation of standard deviation, a sample of 30 is deemed to be adequate to avoid sampling error.

Survey

- Groups of users were excluded from the sample: <21 years of age, all illiterate or non-English/Afrikaans speaking patients, visitors and patients not recorded on our disease registry. These patients might have different views.
- The study was retrospective. There was no opportunity to improve care in response to the audit.
- Non-responders can influence statistical evidence regarding satisfaction/dissatisfaction ratings. Postal questionnaires have a higher non-response rate [2, 6, 14, 20]. Various patients commented on the non-receipt of questionnaires during follow up visits, possibly due to inefficient postal services. The survey relied on the accuracy of the patient database for delivery of questionnaires. The 'return to sender' rate was 2.2%.
- The time-span between consultation and completion of the questionnaire may influence the satisfaction rating. It is postulated that negative experiences are easier to remember, therefore the longer the gap between the use of services and the questionnaire, the greater the chance of recall bias [2, 4, 14, 20, 21.] Nevertheless, patients were encouraged to complete the questionnaires at their earliest convenience. Questionnaire data indicated that 100%, 87.5% and 91.7% of asthma, gout and hypothyroid patients respectively visited the practice within the last year.

b. Questionnaire design

Problems identified with questionnaire surveys: [2, 14, 20, 21]

1. The length of the questionnaire may influence the motivation to complete it.
2. The type of questions asked may be too specific or vague. The questionnaire provided room for elaboration by means of open ended questions.
3. Patient knowledge about the disease. This will be discussed in more detail.
4. The investigator can't question patients' statements or the respondents don't have the opportunity to clarify questions.
5. Treatment outcome can influence satisfaction ratings.

Practice and disease specific questionnaires were compiled to limit the length, using direct/indirect and open/closed questions to prevent under/over reporting and allow expression of views. Patients

completed the questionnaire at home and posted it back at their convenience.

c. Ethical considerations

1. Confidentiality

Patient confidentiality was preserved by the anonymity of the questionnaire. Anonymity disclosure was kept confidential. Data entered into computers was confidential. Access was limited to authorised personnel only. All documents were locked away when not in use. Breaching confidentiality may cause psychological harm to the team member in question. The benefits of the study to the practice, the patients and other practices outweigh the risk of speculated psychological harm. Complaints/accusations against team members were not pursued, as there was no proof to the truthfulness of complaints/accusations.

2. Consent

Consent was obtained with the assumption that if the patients completed and returned the questionnaire, they automatically gave consent. Anonymity and confidentiality were emphasized to avoid and minimize bias. The ethical principle of patient confidentiality in this study was maintained because no identification data was used. Participants in the audit were given sufficient information regarding the research purpose and procedure. The research project has been approved by the Health Research Ethics Committee (REC) at the University of Stellenbosch.

3. Team resistance

The research project aims to improve the practice. Support from colleagues was low because questionnaire completion was not actively promoted during patient visits in this period. Resistance to implementation of change is expected.

Patient Survey

a. Factors influencing patient evaluation of quality of care received

Previous health service experiences and expectations

Previous experiences may determine a patients' current agenda, attitude, adherence and whether a patient continues to seek medical attention in future [2, 3, 4, 5, 6]. Assessment of patients' view to measure quality of health care when relying only on the expression of satisfaction is unreliable. The most frequent source of dissatisfaction is the perceived lack in communicating information. The correlation between the practitioner's competence and communicative skills is not high. Satisfaction is however strongly related to patient expectations. Therefore, if the doctor meets patients' expectations, regardless of the quality of care given, the satisfaction score will be high [2, 3, 4, 21, 22].

Patient satisfaction does not necessarily reflect excellent quality of care. This realization that a practitioner can improve perceptions regarding his practice by meeting patients' expectations can lead to poor health standards [3, 4, 22].

This is illustrated by the high satisfaction ratings in Table 10. The average satisfaction rating for all three diseases was 92.1%, compared to the practice audit performance in Tables 3, 4 and 5 with an average performance of 60.9% against a target of 95.8%. Measuring quality of care, using satisfaction, depends on the extent to which a patient's expectations are met. Meeting expectations results in high satisfaction ratings [3, 4, 20, 21, 22]. However, literature also supports findings of high satisfaction ratings with questionnaire surveys [2]. This illustrates the importance of a carefully designed focussed questionnaire allowing specific feedback and elaboration, with support from a medical audit.

Socio-geographic variables

Contrary to expectations, patient characteristics are minor, variable predictors of satisfaction. The only consistent variable is patient age and level of education. The older and more uneducated patients' tend to be more satisfied with health services [2, 3, 4, 14, 21]. The studied patient population is well educated with an average age of 64 years for the entire chronic population (Table 6).

Knowledge about the topic assessed

It is postulated that if a patient does not have adequate knowledge about quality of care, then this cannot be carefully assessed. To assess quality of care, the respondent must be able to compare it to accepted standards. To do this, the respondent must have adequate knowledge about what good quality of care is [2, 3, 4, 14, 21]. Although the patient population comes from an above average educational background, the disease specific educational questions reflected definite shortcomings regarding disease knowledge. The overall average education assessment performance score was only 69.9% (Tables 7, 8 and 9).

Psychosocial influences

Psychosocial determinants play a major role in surveys. Seven bias theories are put forward which may influence satisfaction ratings [4].

- Social reliability bias: patients report higher satisfaction rates based on the belief that positive comments are more acceptable.
- Ingratiating response bias: patients report higher satisfaction rates due to the fear of unfavourable treatment in future. Ingratiating bias was minimized by ensuring anonymity of

the questionnaires.

- Self-interest bias: reporting higher satisfaction ratings due to the belief that satisfaction will lead to the continuation of a service, which is in the users own interest. The study minimized this by emphasizing that the goal of the audit is to improve services to benefit patients.
- Cognitive consistency bias: patient report high satisfaction to justify the time and effort they put in to use the services. This effect on the statistics should be minimal.
- The survey itself can cause higher satisfaction ratings. Patients feel the effort put in to do a survey is satisfying enough to warrant a high score. This may lead to under reporting of dissatisfaction.
- Patient may only report dissatisfaction if a negative event took place to warrant a complaint. Negative events are remembered more vividly and for a longer time period.
- Simple indifference suggests that patients feel problems will not be remedied, therefore there is no point to comment. Patients were encouraged to voice their views. It was emphasized that to implement improvement, we have to know what is wrong.

b. Patient understanding of disease process

Optimal management of chronic diseases like asthma, gout and hypothyroidism require the participation of patients. To achieve this, patients need to be educated about their chronic disease in order to have an understanding of the disease process and have a detailed written management plan [7, 9, 11, 17].

Goals of Asthma, Gout and Hypothyroidism education include [7, 9, 11, 17]:

- Explanation of the nature of the disease and causes
- Description of drug classes and the purpose of treatment (i.e. prevention/relievers and maintenance/controllers)
- Prevention strategies/trigger factors information
- Lifestyle modification (diet, exercise, smoking, alcohol)
- Recognition of worsening symptoms
- Management of acute attacks (gout/asthma)
- Regular follow-up, recognise the need for earlier review
- Recognise medication side-effects
- Self-management plan (patients manage their chronic disease by adjusting medication as needed)

- Disease specific education. Choice of inhalers and use of PEF meters to assess control and lung function [7].

Ignorance about the use of asthma medication and poor inhaler technique is associated with poor asthma control. A Cochrane review showed that only 46–59% of patients used their inhaler efficiently [23]. A CHEST study showed that 90% of patients thought their inhaler technique was correct, but only 33% demonstrated efficient use. Elderly patients were least efficient, rendering them more susceptible to acute attacks. Only 62% of participants in the CHEST study indicated that they received education on their inhaler technique and treatment options. This concludes that assessing inhaler technique, not only asking the patient if they are inhaling correctly, and teaching patients about their medication, is fundamental to asthma management and control [24].

The asthma population average age was 58.3 with a range of 21-90 years. Treatment education had an overall score of 69.6% and inhaler technique assessment scored a mere 40.9% (Table 7). Only 27.3% of patients received an information leaflet and only 36.4% were asked about aggravating factors (Table 7). From the record review in Table 3 there was no evidence of inhaler technique assessment and education. Only 16.7% of records (Table 3) indicated assessment of control by means of the Asthma control test (ACT) questionnaire and only 68.2% of patients (Table 7) reported that control was assessed during consultation by means of the ACT questionnaire or a PEFR assessment. From the record review (Table 3), 76.7% of records did not have a PEF reading and 83.3% did not have documentation of control assessment by means of a questionnaire. A review article on control assessment showed that 32% General Practitioners have never used a PEFR and 77% have never used a questionnaire to evaluate control [25]. It was clear from the audit that the research practice is equally poor at control assessment based on recognized management guidelines (Figure 3).

CHARACTERISTIC	CONTROLLED (All of the following)	PARTLY CONTROLLED (Any measure present in any week)	UNCONTROLLED
Daytime symptoms	≤2/week	>2/week	3 or more features of partly controlled asthma in any week
Limitation of activities	None	Any	
Nocturnal symptoms/ awakening	None	Any	
Need for reliever/ rescue treatment	≤2/week)	>2/week	
Lung function (PEF/FEV_1)	Normal	<80% predicted or personal best (if known)	
Exacerbations	None	1or more/year*	1 in any week**

** Any exacerbation should prompt review of maintenance treatment to ensure that it is adequate.*
*** By definition, an exacerbation in any week makes that an uncontrolled asthma week.*

Figure 3: Asthma control assessment guidelines [7]

Genetic and environmental factors are recognized contributors to the development of hyperuricaemia and gout. Modifying risk factors and targeting lifestyle and health behaviour is important not only for secondary prevention and treatment of gout, but also for the overall health of the patient [26]. An ageing population renders it more common with a rising incidence [15]. Results from the UK General Practice Research Database indicated that patients were older (61 ± 15 years) and predominantly men (78%) [27]. This correlated well with our population with an average age of 67.5 years and 79% male (Table 6). There is a strong correlation between obesity, alcohol consumption, hyperuricaemia, hyperinsulinaemia, insulin resistance (metabolic syndrome) and gout. 95% and 76% of gout sufferers have hyperinsulinaemia and metabolic syndrome respectively which is associated with an increase in cardiovascular morbidity and mortality. Hyperuricaemia may serve as a marker of insulin resistance and warrants screening [26], keeping in mind that 15 to 20% of hyperuricaemic patients are asymptomatic [27]. In converse, this poses the question whether patients with metabolic syndrome and cardiovascular pathology should be screened for hyperuricaemia. One third of the daily urate load comes from dietary sources, with the remainder generated endogenously. Alcohol consumption precipitates acute attacks. A pilot study of men with gout, showed that diet modification decreased serum levels of urate and the rate of attacks by 17.5% and 71% respectively [26]. Despite obtaining a good overall score of 73.3% for education, only 48.3% of patients received an information leaflet and 39.1% were asked about aggravating factors (Table 8). It is reasonable to expect 80% recording of uric acid levels, but patient feedback showed only 72% of patients were tested (Table 8), and the practice audit showed only 56.7% of levels were recorded (Table 4).

Thyroid disease is one of the most prevalent of medical conditions and increases with age. A review study on hypothyroidism in adults indicated that hypothyroidism is more prevalent in women (85.4%) [12]. This correlates well with our population prevalence of 85.7% women (Table 6). Screening the general population is not justified regardless of the disease prevalence. Hypothyroidism should be managed at primary care level with only a small percentage of patients needing referral to a specialist [12]. There are standard management criteria that must be met by the practice. The treating doctor is expected to have a basic level of knowledge of the disease in order to manage patients satisfactorily. Good practice and audit measures were compiled by the Research Unit of the Royal College of Physicians of London, with emphasis on: 1) understanding the pathogenesis of Hypothyroidism, 2) access to TSH function testing, 3) treatment protocols and 4) specialist referral protocols [19]. The audit confirmed lack of treatment and specialist referral protocols. From Table 9 the overall education score was 66.8%, in-spite of only 17.1% of patients

receiving an information leaflet. This was confirmed in the practice audit with no information leaflets available in the practice. The assessment of 96.7% rate of an annual TSH test from the record review (Table 5) correlates well with the feedback of 83.8% recalling that their TSH was tested at annual review (Table 9). The same applies to the lipogram with 70% and 67.6% for the record review (Table 5) and patient feedback (Table 9) respectively.

c. Patient satisfaction improvement

From arguments regarding the preference for dissatisfaction rather than satisfaction views [3], it was important to consider patient feedback concerning specialist referrals, reasons for low satisfaction rating, emergency management preference and improvement suggestions.

Table 11: Dissatisfaction and Improvement related feedback from patients

Feedback on:	Asthma	Gout	Hypothyroidism
Satisfaction with specialist referral	Referred and agreed (7)	Referred and agreed (2)	Referred and agreed (4)
	Not referred and agreed (10)	Not referred and agreed (20)	Not referred and agreed (28)
			Referred but disagree (1)
	Referred, no comment on agreement (3)	Referred, no comment on agreement (1)	Referred, no comment on agreement (1)
	Not referred, no comment on agreement (1)	Not referred, no comment on agreement (1)	Not referred, no comment on agreement (1)
	Not referred, disagree (1)	Not referred, disagree (1)	Not referred, disagree (2)
Reasons for dissatisfaction	Inadequately explored triggers/allergens (2)	Poor general management (2)	No Education (3)
	Inadequate control (2)	No Education (1)	Inadequate control (1)
	Inadequate GP assessment (1)		Inadequate GP assessment (4)
	Medication side effects (1)		Poor management (3)
			No Communication (1)
Improvement suggestions	Explore alternative treatment (4)	Referral (1)	Improve management (4)
	Education (2)	Education (5)	Education (8)
	More regular assessment (2)		Improve assessment (1)
	Explore Triggers (2)		Cost effectiveness (3)

It is clear that lack of education is a problem to patients as reflected under dissatisfaction comments and improvement suggestions (Table11). Lack of specialist referral protocols was another problem identified by patients, confirmed by the practice audits. General management including control, assessment and investigations was also highlighted by patients. These are all aspects that should form part of treatment- and specialist referral protocols.

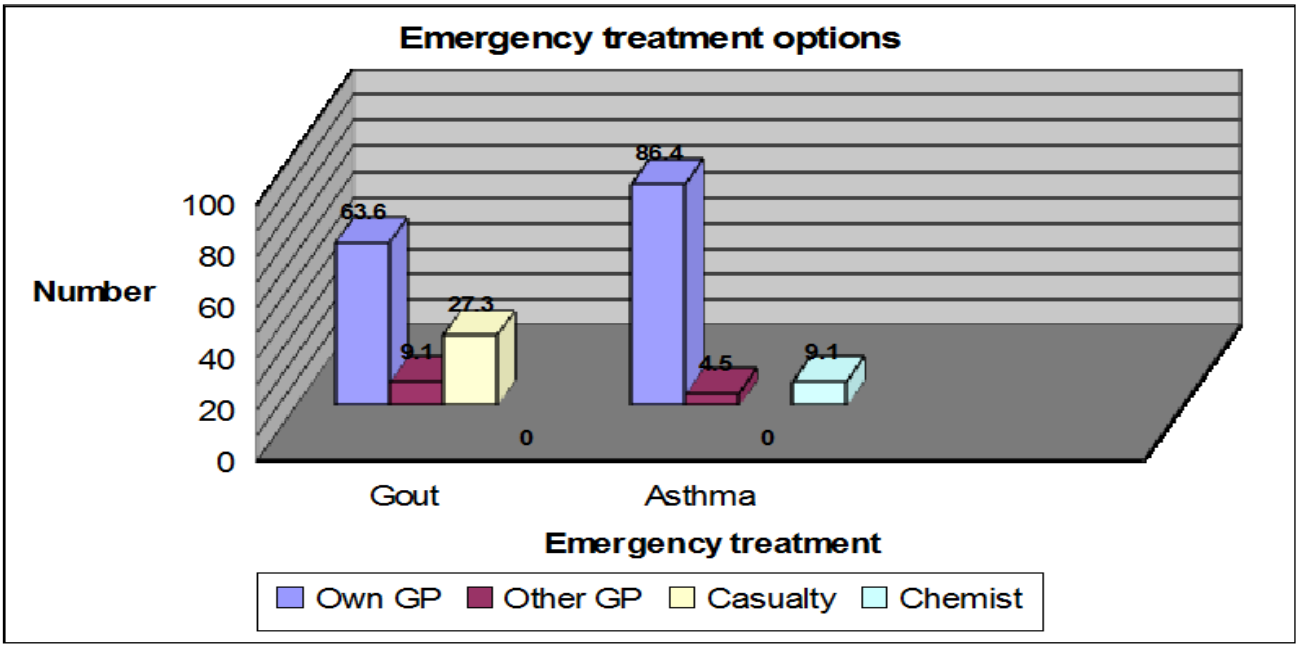

Figure 4: Emergency treatment option feedback

Despite high patient satisfaction levels reported (Table 10), only 86.4% and 63.6% of asthma and gout patients respectively chose to visit their own GP in the event of an emergency (Figure 4). The reason for this is unclear but can confirm that patients in general give high satisfaction ratings.

Practice Audit

a. Structure criteria

Other than the identified problems already discussed, most structural criteria were met.

b. Process criteria

For asthma, the main process criteria identified, was poor assessment of disease control. For gout, lifestyle modification and co-morbidity assessment, similarly to hypothyroidism, were problem areas. As discussed in survey.

c. Outcome criteria

The high incidence of non recorded ratings could result in a bias in the process criteria, therefore an average was calculated in an attempt to accommodate this (Table 12). Regardless, it was still found that the target was not met. From the patient questionnaire it was also evident that 22.7% and 30.8% of patients had one or more acute asthma and gout attacks respectively.

Table 12: Outcome criteria performance: % Patients controlled

	Asthma	**Gout**	**Hypothyroidism**
N = Yes, No & NR (Not recorded) = 30	56.7%	43.3%	66.7%
N = Yes & No	81% (N = 21)	72.2% (N = 18)	83.3% (N = 24)
Average	68.8%	57.7%	75.0%

Target = 80%

The low performance level for gout increases the risk for attacks, if the uric acid level is not kept below 0.36 mmol/l [10, 11, 28].

Conclusions

As is usual in a medical audit, various elements of care and criteria of care are assessed. This study, set in a private practice with medically insured patients, may have expected levels of disease control that were close to 80%. Instead, barring the non-recorded results, control of asthma, gout and hypothyroidism was found to be low with acute attacks of asthma and gout still occurring. Multiple areas of deficiencies that fall below 50% expected performance were identified. The deficiencies are serious and can be remedied by informing the practitioners, re-iterating treatment protocols, giving specific guidelines regarding entry of clinical data into patient records and repeat audits to check on improvement.

In terms of patients' understanding of the disease process, based on set questions, the results showed good understanding and would suit the context where individualised care is being given over many years.

The patient satisfaction rating from the survey were high in spite of the given poor actual performance based on the audit of the records. The upward bias may be due to the average age of the patients' and the perception that care is good because of length and continuity of care and, that patients' are not always aware of deficiencies in their care.

A medical audit, consisting of both a practice audit and patient based questionnaire survey, proved to be useful to quantify quality and identify deficiencies of care.

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